

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

Upon entry of the foregoing amendments, claims 1, 3, 4, 10, 11, 17, 19-31 are pending in the application, with claims 1, 19, 29 and 31 being independent.

Claims 1, 3, 4, 17 and 19 are sought to be amended.

Claims 2, 12 - 16 are sought to be canceled.

Claims 5-9 and 18 are withdrawn.

Paragraph [0017] of the present application is amended to correct minor typographical errors. These changes are believed to add no new matter, and their entry is respectfully requested.

Based on the above amendments and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

All of the independent claims, including new claims 29 and 31 are generic. Therefore, all of the dependent claims depend from respective generic claims.

Applicant traverses the prior art rejections of the claims listed on pages 4-8 of the Office Action.

Claims 1, 25

Claim 1 is amended to include substantially all of the features recited in claims 2 and 12, both canceled. Specifically, claim 1 is amended to recite in part:

a housing configured and dimensioned to be ingestible and/or implantable in an animal body, the housing having an interior space with a cargo bay area and an opening into the cargo bay area;
a payload device, within the cargo bay area,

In the arrangement of claim 1, the payload device is advantageously protected from possible damage from buffeting against internal structures, e.g., intestinal tract, of an animal body because the payload device is *within the cargo bay area interior to the housing*.

In contrast, the prior art sensors are externally disposed and thus exposed to direct, possibly damaging, physical contact. For example, the sensors disclosed in Marshall (U.S. pat. no. 6,632,175) include sensors 50, 52 (also embodied as sensors 80 and 90) “arranged about an *outer surface* of capsule 10” or “arranged about the *capsule surface*.” Marshall, col. 4, lines 51-53; and col. 9, lines 58-59; and FIGs. 8, 9 and 11. None of the other references taken alone or together disclose or suggest the above recited features of claim 1.

Claim 1 is further amended to recite an “interface” that provides a removable electrical and mechanical connection between the capsule (i.e., cargo bay area) and the payload device. New claim 25 further defines the connection introduced in claim 1. Exemplary support for the claimed interface can be found in the present application at paragraphs [0017] and [0018], and in FIG. 1.

The claimed interface advantageously permits an easily removable connection between the payload device and capsule, and enhances the modularity of the arrangement, that is, different types of payload devices can be plugged into and disconnected from the capsule. None of the prior art references taken alone or together discloses or suggests the interface feature recited in claim 1 or claim 25.

For at least the reasons advanced above, claim 1 is patentable.

All of the claims depending from claim 1 are patentable for at least the same reasons claim 1 is patentable.

Claim 19

Method claim 19 is amended to include the feature of multiple directional ultrasonic transducers, electrically connected to the transceiver, arranged to provide 2pi steradians of solid angle coverage about the capsule, as is similarly recited in new claim 26. Claim 19 is believed patentable for at least the reasons advanced below for the patentability of claim 26.

Claims 26, 27

New claim 26, depending from claim 1, recites that the capsule includes:

multiple directional ultrasonic transducers, electrically connected to the transceiver, arranged to provide *2pi steradians of solid angle coverage about the capsule.* . . .

New claim 27 further defines the transducer arrangement introduced in claim 27.

Exemplary support for claims 26 and 27 can be found in the present application at paragraph [0012] and FIG. 1 (transducers 12).

The feature of *2pi steradians of solid angle coverage*, i.e., *omni-directional coverage in three-dimensions*, recited in claim 26 advantageously ensures reliable capsule communication connectivity regardless of random capsule orientation. For example, the *2pi steradians of solid angle coverage* in a capsule “configured . . . to be ingestible” ensures communication connectivity even when the capsule, when swallowed, tumbles end-over-end along an alimentary canal within an animal. The prior art fails to teach or suggest this feature and its attendant advantages.

Smith (U.S. pat. no. 5,515,853) teaches “*cylindrical crystals* (X1),” positioned concentrically along the axis of catheter C, configured to transmit ultrasound waves. Smith: col. 13, lines 28-29; and col. 13, lines 61-62. As would be appreciated by one having ordinary skill in the relevant arts, each of cylindrical crystals X1, X2 generates only *two-dimensional cylindrical waves* that emanate away from the catheter axis, i.e., ultrasound waves that are *omni-directional in only two-dimensions*. The cylindrical ultrasound waves do not emanate substantially along the axis of catheter C, and thus have a null in this direction. Therefore, each of the Smith transducers X1, X2 fails to provide *2pi steradians of solid angle coverage* as is recited in claim 26. Moreover, the arrangement in Smith does not suggest the transducer arrangement recited in claim 27.

Claim 28

New claim 28 includes the monitoring features of original claim 24 (now canceled) as applied to the capsule of claim 1.

Claims 29, 30

New claim 29 replaces claims 14-16 (each canceled), and focuses on inter-capsule communication. Claim 29 includes all of the combined features of claims 14-16, and also includes the following features:

- (i) capsules configured to be ingestible and/or implantable; and
- (ii)
 - wherein the at least two capsules are configured for networked communication with each other using ultrasonic signals,
 - wherein each of the networked capsules is identified by a unique identity (ID) address or a unique acoustic frequency, and
 - wherein the networked communication includes a two capsule handshake procedure wherein one of the capsules periodically initiates transmission and the other capsule responds directly by acknowledging receipt of the initiated transmission.

Exemplary support for claim 29 can be found in paragraphs [0030] and [0031].

None of the prior art references taken alone or in combination (including Scarantino (U.S. pat. no. 6,402,689) at col. 24, line 62 – col. 25, line 51; and Christopherson (U.S. pub. no. 2002/0123672)) teaches the combination of features recited in claim 29, including the specifically claimed inter-capsule communication networking feature.

The *2pi steradians of solid angle coverage* provided by each capsule as recited in new claim 30 enhances inter-capsule communication connectivity over prior art arrangements.

Claim 31

New claim 31 includes all of the combined features of original claims 1, 2, 12, 13 (claim 31 recites an “electrical connection between microprocessor and payload device” similar to the signal interface recited in claim 13), and new claim 25 (2pi steradians coverage). None of cited references alone or in combination teaches the combination of features recited in claim 30.

Information Disclosure Statement (IDS)

Applicant respectfully requests that the Examiner review the IDS references filed herewith, and return the initialed accompanying PTO-Form 1449 to Applicant.

Conclusion

On the basis of the above amendments and remarks, reconsideration and allowance of this application is believed warranted. If the Examiner believes, for any reason, that personal communication will expedite prosecution, the Examiner is invited to telephone the undersigned at the number provided.

Respectfully Submitted,



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